(12) UK Patent Application (19) GB (11) 2 345 787 (13) A

(43) Date of A Publication 19.07.2000

(21) Application No 9917068.0

(22) Date of Filing 22.07.1999

(30) Priority Data
(31) 9900351 (32) 12.01.1999 (33) FR

(71) Applicant(s)
Team Concepts Europe
(Incorporated in France)
Domaine d'Entreprises - Bureau 5021,
29 Rue Condorcet, 38090 Vaulx-Milieu, France

(72) Inventor(s)
Anthony T.H. Tse

(74) Agent and/or Address for Service
Hulse & Co
St James House, 8th Floor, Vicar Lane, SHEFFIELD,
S1 2EX, United Kingdom

(51) INT CL[7]
G11B 31/00 , G09B 5/06

(52) UK CL (Edition R)
G5R RAC RB265
U1S S1172

(56) Documents Cited
EP 0463694 A2 EP 0436877 A2 WO 98/45769 A1
WO 98/36345 A1 JP 100235030 A US 5801922 A
US 5668954 A US 5572399 A

(58) Field of Search
UK CL (Edition Q) G4A ADT , G5R RAB RAC
INT CL[6] G06F 1/16 , G09B 5/06 , G11B 31/00 33/06 33/10
Online:EPODOC;JAPIO;WPI

(54) Abstract Title
Educational electronic game

(57) This game is in the form of a small computer, of the type comprising a keyboard, or comprising a keyboard (2) and screen (4). In order to increase the audio data content of the game, a compact disc reader (6) is integrated in or associated with said game, said reader (6) being connected to the central processor of the game. Said reader (6) receives audio compact discs containing audio data associated with the proposed games activities or educational activities.

FIG1

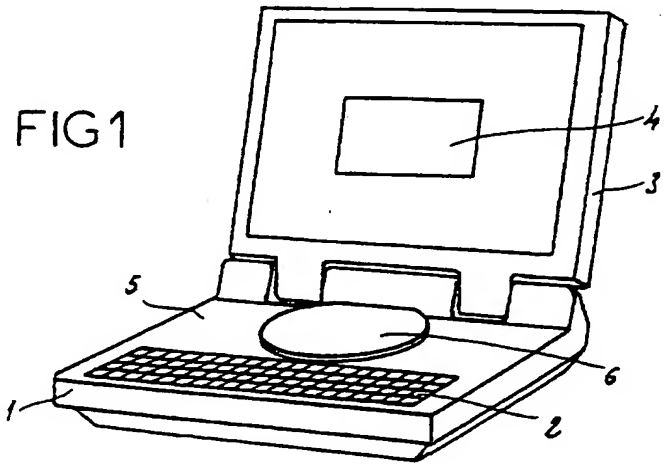

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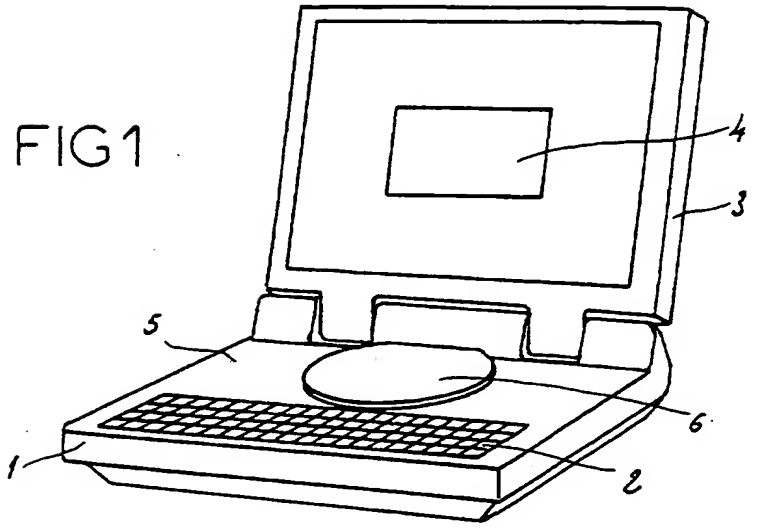
FIG1



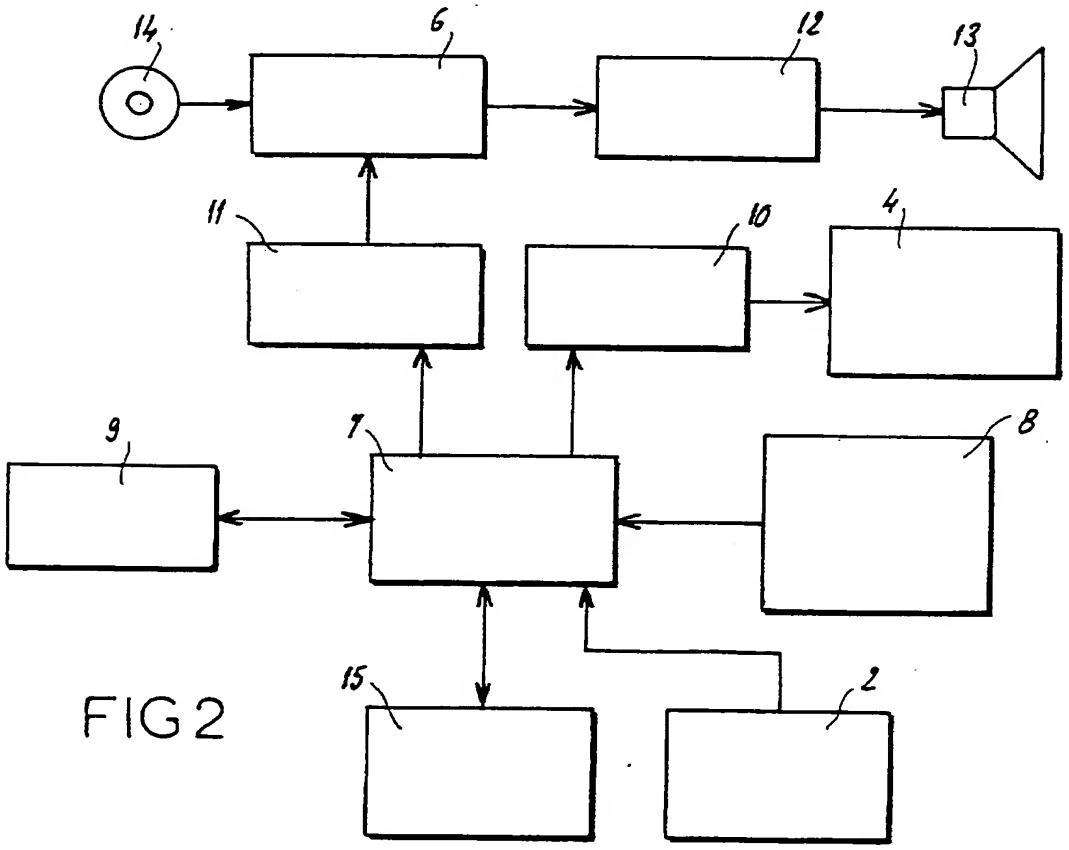


FIG2

Educational electronic game

The present invention relates in general to the games and toys industry, and relates in particular to educational electronic games for play and pre-school purposes.

Educational electronic games, as currently distributed, take the form of small computers, of the type comprising a keyboard or comprising a screen and keyboard, for children from the age of five, or of the "card index" type, for younger children, with multiple activities and levels and with a certain number of peripherals, which are either of a standard type (printers, adapters, television connectors) or which are specific to these types of games (extension modules, mains connection cables, cables for connecting to a computer, etc.).

These educational electronic games offer a large number of varied activities (from about 10 to about 80), which can be classified into several categories:

- educational activities: languages, spelling, grammar, arithmetic, mathematics, general knowledge, etc..
- games activities: games of memory, of reflexes, naval battles, etc.
- activities which act as an introduction to word processing, spreadsheets, graphics, typing, etc.

Taking into account the degree of sophistication of the programs which have been produced, the user's age (which is from about 3 to 10 years, so that the user either can or cannot read), and also the technical limitations such as the size of the screen (which normally consists of a liquid crystal screen of limited size and resolution) or the size of the game's read-only memory, which does not permit entire pages of help screens to be stored as in a classical computer), said games are most often speaking games. Words are used both to give instructions to the child, in order to encourage, correct and congratulate him, and to teach him the pronunciation of a word (particularly in activities which introduce foreign languages), or to assist him in deciphering vocabulary which he is not necessarily able to read yet.

All the data, whether spoken or written, are currently stored in the internal memory of the game. In certain cases, part of said data may be stored in an external memory, by means of what is termed an extension module which enables additional activities or data to be added, for example.

According to what is quite a recent practice, some educational electronic games also possess a replica of a compact disc reader. These are actually imitation readers, in the sense that even though the compact discs are real they are in fact blank and are only used as "keys" to initiate a certain number of activities or a certain group of data which are already originally recorded in the internal memory of the electronic game. For this purpose, the inserted disc is identified by an optical reader, which reads the impression produced on the top face of said disc. Moreover, said compact disc "reader" for these products cannot rotate the compact disc so that the latter can be read, since it is devoid of any motor which is provided for this purpose. In most cases, the inserted disc rotates under the action of the motive force exerted manually by the user, by a purely mechanical action when the user closes the compartment which receives the disc.

The current technique, which consists of storing audio data or data which are written to a memory, has two major disadvantages:

Firstly, this technique suffers from a considerable limitation of the amount of data which can be stored, which limitation is mainly applicable to audio data. For example, a memory of 2 or 4 megabytes, which is currently that which is mostly used for the type of electronic games considered, can only contain about 60 to 120 seconds of good quality audio recording, since it is in fact necessary to provide about 1 megabyte per 30 seconds of audio recording.

Secondly, the quality of reproduction of said audio data varies from average to poor. In fact, once digitised and stored in memory, the audio message loses its initial quality and is subject to changes such as : a more "metallic" voice, background noise, and sounds which "cease" poorly. Moreover, when attempting to record more audio data in these small memories, the sound is often compressed before being stored, which further reduces its quality in variable proportions according to the compression ratio.

As a result, educational electronic games of the type considered here are inferior products as regards recorded audio data, and do not correspond to the primary requirements of parents or educators. In particular, these products comprise the following defects with regard to their use:

- they are not "user-friendly" to the young users at whom they are aimed (inability to understand games, insufficient mastery of reading to be able to play them)
- they are poorly suited to activities such as learning foreign languages, where pronunciation is of primary importance, or for spelling, where the identification of a spoken word has to be immediate and clear in order to prevent the child from typing another word.

Thus, as a whole, games such as these are still the subject of severe and justifiable criticism on the part of consumers.

The present invention aims to remedy the disadvantages explained above, and the object thereof is therefore to enable educational electronic games of the type considered here to become greatly augmented as regards the amount of audio data recorded, whilst providing audio reproduction of faultless quality, so as significantly to increase the activities and possibilities of these products.

For this purpose, the present invention essentially relates to an educational electronic game, in the form of a small computer of the type comprising a keyboard or a screen and keyboard, wherein a reader for compact discs, particularly a reader for audio discs containing audio data associated with the proposed educational or games activities, is integrated in or associated with said educational electronic game, said compact disc reader being connected to the central processor of said game.

The present invention is thus essentially characterised by the integration in or the association with educational electronic games of a genuine reading mechanism for audio compact discs which enables a large number of activities and/or options to be installed which have not been possible hitherto. In fact, each audio compact disc can contain up to 110 minutes of audio recording, which represents a considerable amount of data by comparison with current memories. Moreover, the audio quality of an audio compact disc corresponds to that of the original

recording, which implies a faultless level of quality. Thus the present invention provides both quantitative and qualitative advantages in relation to stored audio data.

Examples of the activities and possibilities provided by the present invention comprise: a talking dictionary, a talking translator, spoken foreign language lessons, spoken general cultural topics, spoken rules of games and spoken help texts, dictations, etc.

The presence of a compact disc reader enables an educational electronic game which is equipped therewith to be used for many purposes:

A first category of uses consists of activities which by their nature necessitate a prior audio recording, which is stored on the compact disc. In this case there is a real interaction between the compact disc which is inserted in the reading mechanism, the screen and the keyboard. In a dictation activity, for example, the compact disc contains and dictates the text, the child uses the keyboard to type the dictated text, and the text which is thus composed appears on the screen. If an error is recorded, dictation stops automatically, and the user is asked to correct said error.

In principle, other activities can be carried out without the intervention of a compact disc comprising an audio or text recording. In the course of activities such as these, by virtue of the integrated reader, the child is able alternatively to hear selected background music, or can even listen to his own discs.

Finally, by virtue of its compact disc reading mechanism, the educational electronic game according to the invention can be used as an independent compact disc reader, where the game itself is suppressed except for the audio functions thereof. The child can thus listen to his own audio compact discs without performing any other activity.

Inasmuch as an educational electronic game of the type concerned is usually in the form of a small case, with a main body bearing a keyboard and a hinged lid provided with a screen, the compact disc reader is advantageously integrated in the main body of the small case. In

particular, the compact disc reader can be located on said main body, in the area situated behind the keyboard, which makes it conveniently accessible without impairing the use of the keyboard.

In order to ensure that it can operate in cooperation with the other components of the educational electronic game, the compact disc reader is connected to the central processor of said game via a control device, particularly by a device in the form of a control microprocessor. The compact disc reader is also connected to at least one loudspeaker via a digital-analogue converter.

The invention as a whole will be better understood with the aid of the description given below, which refers to the accompanying schematic drawings which illustrate an example of an embodiment of said educational electronic game.

Figure 1 is a general aspect, in perspective, of an educational electronic game according to the present invention, comprising an integrated compact disc reader; and

Figure 2 is a block diagram of said educational electronic game.

As shown in Figure 1, the educational electronic game has the external appearance of a replica of a portable computer in the form of a small case, the main body 1 of which bears a keyboard 2 on its top face, and the lid 3 of which, which is joined by hinges to the main body 1, comprises a liquid crystal screen 4 in its interior, which screen is turned towards the user when the lid 3 is opened and raised upwards.

The keyboard 2 substantially occupies the front half of the top face of the main body 1, and thus frees the back half 5 of said face. A compact disc reader 6, with its mechanism which is known in the art, is integrated in the main body 1 here, the reader 6 being located in the back half 5 of the top face of said body 1. The reader 6 is thus made accessible once the lid 3 is opened, in order to permit the introduction and removal of selected discs.

The block diagram of Figure 2 shows the customary internal parts of an educational electronic game such as this, the central element of which is a microprocessor 7 which is connected to a

system read-only memory 8 and to a system and data random-access memory 9. The central microprocessor 7 is connected to the keyboard 2, and is also connected to the liquid crystal screen via a screen driver 10.

The central microprocessor 7 is also connected to the compact disc reader 6 via a second microprocessor 11 which controls said reader 6. A digital-analogue converter 12 connects the compact disc reader 6 to a loudspeaker 13.

The introduction of an audio compact disc 14 into the reader 6 enables the system to operate using the audio data (human voice and diverse sounds such as music and other sound effects) which are stored on the disc 14. These audio data, which are recorded in digital form, are converted in the converter 12 into an analogue signal before being transmitted to the loudspeaker 13, which reproduces them at a high level of quality.

Only a small part of the audio data remains stored in a microprocessor 15 which is dedicated to sound, which is incorporated in the usual manner in the product and which is itself controlled by the central microprocessor 7.

By virtue of the interface formed by the microprocessor 11, the compact disc reader 6 cooperates with the central microprocessor 7, and consequently cooperates with all the other components, particularly with the keyboard 2 and the screen 4.

It is self-evident that the invention is not limited to the single embodiment of the educational electronic game which has been described above. On the contrary, for example, it encompasses all constructional variants and variants of use which comply with the principle of the invention. In particular, the following do not depart from the scope of the invention:

- modifying the position of the compact disc reader 6, which is not necessarily integrated in the main body 1 in the position illustrated in the drawing and can also take the form of a separate module, in the manner of a "peripheral" which is connected to the rest of the product by an appropriate electrical connection;

modifying or augmenting the content of compact discs which can be used with said educational electronic game, with adaptation of the reader for said discs, which in the system described above is exclusively a reader of audio data but which could also be suitable for reading written data and/or data relating to images, and which could therefore be suitable, for example, for receiving video compact discs or CD ROMs.

CLAIMS

1. An educational electronic game, in the form of a small computer of the type comprising a keyboard, or comprising a screen and keyboard, wherein a reader for compact discs, particularly a reader for audio discs containing audio data associated with the proposed educational or games activities, is integrated in or associated with said educational electronic game, said compact disc reader being connected to the central processor of said game.

2. An educational electronic game according to claim 1, in the form of a small case having a main body and a lid, wherein the compact disc reader is integrated in the main body of the small case.

3. An educational electronic game according to claim 2, wherein the compact disc reader is located on the main body of the small case, in the area situated behind the keyboard.

4. An educational electronic game according to claim 1, wherein the compact disc reader is constructed as a module which is separate from the main body of the game and which is linked to said body by an electrical connection.

5. An educational electronic game according to any one of claims 1 to 4, wherein the compact disc reader is connected to the central processor of said game via a control device, particularly a device in the form of a control microprocessor.

6. An educational electronic game according to any one of claims 1 to 5, wherein the compact disc reader is connected to at least one loudspeaker via a digital-analogue converter.

7. An educational electronic game, substantially as herein before described with reference to the accompanying drawing(s).

The Patent Office

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Application No: GB 9917068.0 **Examiner:** Donal Grace
Claims searched: 1 to 7 **Date of search:** 14 October 1999

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.Q): G4A (ADT) G5R (RAB, RAC)

Int Cl (Ed.6): G06F 1/16 G09B 5/06 G11B 31/00, 33/06, 33/10

Other: Online: EPODOC; JAPIO; WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	EP 0463694 A2	(MAGNAVOX) see 17, figure 4	1 to 6
X	EP 0436877 A2	(SONY)	1, 2, 5, 6
X	WO 98/45769 A1	(WOJCIK)	1, 2, 5, 6
X	WO 98/36345 A1	(SOPKO)	1, 4
X	US 5801922	(SHEN et al)	1, 2, 5, 6
X	US 5668954	(FEDER et al)	1, 5, 6
X	US 5572399	(SHIRATO et al)	1, 2, 5, 6
X	JP 100235030 A	(TENYO) see JAPIO abstract and figure 1	1, 2, 5, 6

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